FINANCIAL ASPECTS IN THE TEXTILE INDUSTRY BY USING THE SPINNER JET SYSTEM

by Raden A. Harianto

Submission date: 31-Aug-2020 09:46PM (UTC+0700)
Submission ID: 1376966857
File name: FINANCIAL_ASPECTS_IN_THE_TEXTILE.pdf (131.64K)
Word count: 2761
Character count: 15667

FINANCIAL ASPECTS IN THE TEXTILE INDUSTRY BY USING THE SPINNER J ET SYSTEM

Nomor DOI : 10.13140 / RG.2.2.15.000.03845

!
!
!
!

Published 2019 in
RESEARCH GATE

!
!
!
!

First Author :

Dr. Ir. Raden Achmad Harianto, MM
NIDN : 0418045804

Faculty of Economic & Business
UNIVERSITAS BHAYANGKARA JAKARTA RAYA
BEKASI
2019

Financial Aspects in the Textile Industry by Using the Spinner Jet System

Dr. Ir. Raden Achmad Harianto, M.M.
Associate Professor at Universitas Bhayangkara Jakarta Raya
Email : *raden.achmad@dsn.ubharajaya.ac.id*

Abstract

The objective of the research are to study in comparing of financial sector between Ring Spinning and Jet Spinner with assumption that the spinning factory is established to meet the standard completely, large size and construction are ideal, and the factory areal is feasible for the instalation of the mechinery with full running.

The research was conducted at PT. Argopantes in Spinning factory unit III. Method used in this research is descriptive, the technique of collecting data are observation and interview.

The result of the investigations show that the financial aspects get a profit in Jet Spinning system as follows : (1) The Jet Spinner process is more simple than ring spinning, (2) The productivity is going up, (3) there is labor productivity additional and cost down, and (4) the reduction of production cost.

Based on the study findings it could be concluded that the Jet Spinner processing improve the efficiency in yarn quality and cost down than the Ring Spinning.

Key Word : *Finansial, Industy, Jet Spinner.*

A..Introduction

Judging from the factors that influence the spinning process of Jet Spinner machines from an economic aspect. There are many factors that are related to the cost of production in making threads using the Jet Spinner system yarn from one country to another is very different, and this is depends on the conditions climate of each country. Apart from this problem, the author will examine this paper in a limited context in terms of data. Studied based on a comparative study between the Jet Spinner spinning system and Ring Spinning, so this study will provide a fairly valid and reliable picture.

To conduct this comparative study, it is first assumed that the things that need to be considered are:

1. The spinning mill built is quite complete to meet the standards.
2. The size and shape of the building is quite ideal.

3. The area of the factory is quite feasible so that there is a continuity of the engine installed with a full (large) workload in several ways.

The results of the "Shirley Institute" study show that the layout of the machine factories must be able to produce around 455 kg per hour, and this for 50 Tex threads.
The Lay Out Plant in the spinning III factory of PT. Argopantes, it appears that the process that does not change is the engine unit from the bale store to the drawing frame, while the others change. If there are 4 Roving Frames, 25 Ring Frames and Mach Coner can be eliminated only by 24 sets of Jet Spinner machines.
The Jet Spinner system, especially in the case of a lot of bribery, takes place mostly compared to the ring frame system, because here uses cans, but when looking at the balance about eliminating Speed Frame and Winder, the things associated with taking more places are not problem, especially if it is associated with a high amount of production. In order to be clearer about the information regarding this matter, it can be seen in table 1 and table 2 below.

Table 1: Properties of Yarn Spinning Results of JET SPINNER

Properties of Yarn	**Compared to Ring Spinning** (Spun Yarn)
Average of Production	3 - 3.5 times
Great Rolls	20 times
Number (Tex)	20 - 60 (5 - 600 on the Frame Ring)
Antihan / Twist / Twisting	10-15% higher
Average Strength	15 - 20% weaker
Variation in strength	Less
Extensibility	10% higher
Work of rupture (WOR)	Same
Regularity	10-20% better
Number Variation	Better
Appearance	More uniform
Bulkiness	10% greater than the specific volume
Surface Fur	More smooth and slippery
Cleanliness	20 - 40% less
Nep	Better
Thread error	Less
Stability	80% can be reduced
Hold rub	Better
Handle	20 - 30% better
Mixing Fiber	More rough
Dyeing results	Better
Thread Disconnect	Good (more alive)
	75% can be reduced

Table 2: Characteristics of Using Fabrics made from Jet Spinner Yarn

Properties of Yarn	**Compared to Ring Spinning** (Spun Yarn)
Disconnect threads in Reeling	50% reduced
Splicing (after rolling)	15-17 / kg decreases
Broken heart in weaving	70% decreases
Break the feed at Weaving	25% reduced
Strength (Pull, Tear, Broken)	Reduced
Appearance	More uniform
Closing Power	10% better
Cleanliness	Better
Heat Insulation	10 - 5% better
Air Permeability	10 - 25% better
Water absorption	Better
Shrinkage	Same
Dipping power	Better
Raising	Easier and more evenly distributed

From Table 1 and Table 2 it appears that the production produced including other factors show a positive level of improvement.
For example, the average produc[illegible]is almost [illegible]es. In conditions, the factory capital costs regarding Jet Spinner machining are 5-10% higher b[illegible] there will be a very significant difference when processing fine threads. In addition, the production working time for Jet Spinner can be up to 168 hours per week, while for the Ring Frame 112.5 hours. This fact resulted in investment in spinning mills with Jet Spinner machines to date attracting many scientists and entrepreneurs. But until now the textile industry entrepreneurs still face difficulties in making decisions whether to continue to use the ring frame machine along with the simplex and winder machines, or to use the super high draft system through the Jet Spinner engine in terms of its economic aspects. To provide accurate information for textile industry entrepreneurs in strategic decision making, research and assessment needs to be carried out through comparative studies on economic aspects in the Jet Spinner yarn spinning industry.

B. The Problem Formulation

From the background of the above problem, it can be formulated that: What are the financial aspects of the textile industry in the yarn spinning department, if the production cost of a Jet Spinner machine is compared to a Ring Frame machine?

C. The Research Purposes

This applied research was conducted with the aim of knowing the ratio of production costs between the operation of the Jet Spinner machine and the operation of the Ring Frame machine in terms of financial aspects.

D. Benefits of Research

The benefits of this research are as reference information for the President or Textile Industry company leaders in strategic decision making, namely whether to buy yarn products or use Jet Spinner machines or Ring Frame machines in one package with Speed Frame machines and Mach Coner Winder machines.

E. Research Method

The Quantitative research is carried out using descriptive methods. Comparative studies between the production costs of Jet Spinner machines and the operating costs of Ring Frame machines are reviewed from their financial aspects. The method of data collection is done through field surveys, factory documentation, observation and interviews. The location of this research is PT. Argopantes in Spinning III Unit, which is on the Perintis Kemerdekaan Highway in Tangerang, for 2 months in November and December 2016

F. Result and Discussion

1. The Operation Cost

Depreciation of machinery is proportional when it is associated with capital costs, if the existing risks (past) are considered non-existent. Depreciation and maintenance of buildings are also calculated rationally in relation to the location. Machinery and factory building insurance is also proportionally related to the first investment (origin). As for the amount (quantitatively from the value of raw materials) in the work process all the same for depreciation and insurance.

In general, the material fed on the Jet Spinner machine requires product quality that must be good, so it needs more careful consideration for the process. Unlike the process on the Ring Frame which only has 3 functions of the work process, namely drafting, twisting, and winding there are not many problems in the process, such as the Jet Spinner machine that takes over the tasks of Simplex, Ring Frame, and Winder machines that

In the Ring Frame spinning process, the amount of waste that occurs in the Roving / Simplex engine is 2%, and 2% in the Ring Frame process, while the process in Jet Spinner produces 1.5% waste. Realization of profits to 2.5% for the waste of the Jet Spinner process, in other words there is an emphasis in the amount of waste produced. When associated with additional money savings, it is clear that there is an addition by reducing waste by 2.5% during the process with the Jet Spinner system. Emphasis on process costs is very effective while production itself continues to increase.

2. The Energy Use

Research that the author did at PT. Argo Pantes points out, with the energy that has been used in running the Jet Spinner engine is dissipated in the form of empty loads; the following equation is an empirical approach, namely:
The energy to run the Rotor-rotor is:
(D) = (3.5 x 10 - 12) N 2.5 DR 3.8 W, where DR is the outer diameter of the rotor in units of inches and N is the rotor speed (RPM).

Table 3 : Annual Spinning Savings of Jet Spinner System (£' 000)

Linear Density (Tex) Yarn Number (Ne)	60 10's	35 16's	25 24's	15 36's
Fixed Cost : - Room - Insurance - Material	 1,3 -0,3 0	 2,4 -1,2 0	 4,1 -4,2 0	 6,4 -8,1 0
Operation Cost : - Waste - Power (Energy) - Operator (labour)	 13,7 16,7 32,4	 13,7 14,5 45,1	 13,7 10,6 63,1	 13,7 -3,1 94,3
	63,8	74,5	87,3	-103,2
+ Capital Cost	-4,8	-23,2	-83,4	-161,2
++ Annual Net Savings with Jet Spinner	59,0	,3	3,9	-58,0

The transmission efficiency is very low (about the same as the Ring Frame), then the equation above becomes:
D = (8.2 x 10 - 12) N 2.5 DR 3.8 W Where the transmission value is calculated.
From this equation, it shows the direct effects on the magnitude of the rotor diameter and speed. For Example:
If the rotor diameter is reduced to 50% of its origin, and the speed is increased by almost three times, then the energy spent remains the same as the original condition.

3..Engine Efficiency

Since spinning Jet Spinner is a new process, all machines from the form of modern design and stop motion equipment are further enhanced, such as doffing time equipment and others - related to efforts to increase efficiency.

Because the rolls of the product are large, the doffing time is increasingly rare, which means the engine rarely stops (efficiency can be improved).
Disconnect threads rarely and less than threads produced on the Ring Frame, and when the thread breaks, the process automatically stops. So there is no missing machine load. The breaking time in the machine is used to clean up the dirt found in the roto-rotor groove.

When the engine is stopped, the risk of breaking the thread is very small, especially when the engine is restarted after being stopped. This happens because of the automatic equipment that holds the threads during the process. Due to the large form of yarn produced, there is a reduction in duty / work handling in doffing (infrequent or extended

doffing) and this is a labor saving where this free working time can be used for cleaning or other work related to the scope of Jet Spinning machines.
Capital savings can be further enhanced by the elimination of drawing, speed frames and winding processes and for other businessmen / investors who are not less interesting is the state of their employees' salaries (of course salary at Spinning of the Ring Frame is different from salary in the Spinning of Jet Spinner).

4..Cost Balance

From studies that have been carried out, the Jet Spinner spinning system has 2 economic perspectives, namely those that are advantageous and those that are not profitable if this is all compared to spinning ordinary spinner jets.
In table 3 below, we can see an illustration of the cost balance between spinning Jet Spinner and Ring Frame systems.
+ Average cost (expense) = 20% of the engine cost.
++ Without detailed calculations (rough calculations) of possible savings reserved is in the Winding process like Mach Coner.
Note:
The average production of 1,000 lbs per hour (455 kg / hour) the machine works 3 shifts.
From the illustration above, it can be seen that the Jet Spinner spinning system will be very good for making coarse to medium threads (type of Jet spin with Splicer at a speed of 40,000 - 80,000) and ECP (Ring Frame) was combined in making 24 tex threads (25's Ne). In practice every day BEP will be more likely to be pressed again at the level of making 37 tex threads.

5. The Advantages of a Jet Spinner Spinning System

If you see the results of the production of the Jet Spinner machine that is the shape of a large Cones and this shape is almost the same as the product of the Winding machine. In fact, it is clear that the Jet Spinner engine will shorten a series of processes, even at present, there are many preparation processes for weaving machines whose threads are supplied by thread cones from the production of Jet Spinner machines.

As is known, in terms of product efficiency, in the Winding machine, it is larger than the roll, and it is also higher than the productivity value, and for this, from the Jet Spinner engine whose large roll can neutralize the situation, so it can match the results of Winding engine products.

In other words, the production of the Jet Spinner engine is really able to increase production both in terms of quality and quantity, also shorten the work process by not eliminating the quality aspects of the product desired by consumers.

6. Conclusion

Financial aspects that are beneficial in the Textile Industry with Jet Spinner system, it can be concluded, that:
1. A long series of spinning processes can be simplified.
2. Yarn production capacity can be increased
3. Increased work productivity can save costs.
4. Production costs can be saved

7. Recommandation

From the results of the research described above, it can be recommended that: both the Entrepreneurs / Stake Holders and the President Director / CEO can choose the Jet Spinner machine if you want to make a thread under 25 tex, and if you want to make fine yarn above 25 tex > Ne1 40 can choose the Ring Frame engine simultaneously with the Flyer / Simplex engine and the Mach Coner machine.

8. Reference Book

. Eddy Herjanto. (2009), *Manajemen Produksi & Operasi*, Penerbit: PT. Gramedia Widiasarana Indonesia, Jakarta

Elliot B. Grover and D.S. Hamby, (1969). *Handbook of Testing and Quality Control,* John Wiley & Sons, New York.

. Husein Umar (2009). *Studi Kelayakan Bisnis,* Manajemen, Metode & Kasus. Penerbit: PT. Gramedia Pustaka Utama, Jakarta.

Moeliono, M. (1998). *Arena Tekstil No. 7.* Penerbit : Balai Besar Tekstil, Bandung.

Murata (1990). *Hand Book ... Spinning System,* Murata Co., Ltd. Japan.

. Nield R. (1995)., *Open End Spinning*, The Textile Institute Manchester, Textile Institute Monograph Series

. Trijono (2000). *Study Kecepatan Rotor dan Rol Penyisir terhadap Mutu Benang* BD 200 BS TOYODA.

..Vaclav Rohlena, et. al.(1995).,*Open End Spinning,* Elsevier Scientific Publishing Co, Amsterdam

Shigeru Watanabe (2004). *Textile Technology,* Published and Printed by Dainippon.

. Sofyan Assauri, (2016). *Manajemen Operasi Produksi*, Penerbit: PT. Raja Grafindo Persada, Jakarta

Bio Data Author

Dr. Ir. Raden Achmad Harianto, MM is the first son of the Real Admiral. TNI R.A. Basit (late) and as a grandson of Marshcal TNI Prof. Dr. dr. Abdurachman Saleh. And he was born in Jakarta on April 18 and took his final education at the State University of Jakarta (UNJ) in the Industrial Environmental Management Study Program and graduated in 2009, and received an award from the UNIS Chancellor of Tangerang for his achievements in his doctorate . In 1993, he received an award as the 3rd Winner at the National Lecturer level in the field of Science and Technology with the theme: The Application of Linear Programming with the Graphical Method on Textile Industry, with TIFICO Japan organizers. Since 2004 he was trusted as Chair of the Research Team at UPN "Veteran" Jakarta for the field of Textile Technology. In 2007 he participated in education and training in Type A and Type C AMDAL assessors at Fisheries University, Jakarta. Then in the same year he received an award as the deepening study of Research Methodology and Statistics from the Postgraduate Program at the Jakarta State University. In 2013 - 2017, he worked as an Associate Professor in the Postgraduate Program and served as Dean of the Faculty of Engineering in the UNIS Tangerang environment. In addition, he also works at PT. Nadya Mars Amerta in the field of Management and Engineering Consultant as an Expert Advisor and also as a lecturer in undergraduate S1 and Master program S2 at Business School STIE Gotong Royong, STIE Widya Jayakarta, and STIA Yappan in Jakarta. And starting in July 2017 Active as a Permanent Associate Professor at the Faculty of Economics & Business at Bhayangkara University, Greater Jakarta, Campus II Bekasi. Besides that, in the Professional Organization as a member of the Association of Industrial Engineering and Management (ISTMI) / BKTMI and also as a member of the Indonesian Engineers Association (PII) and a member of the Indonesian Economic Scholarship Association (ISEI).

FINANCIAL ASPECTS IN THE TEXTILE INDUSTRY BY USING THE SPINNER JET SYSTEM

ORIGINALITY REPORT

8%	6%	5%	7%
SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS

PRIMARY SOURCES

1	Submitted to CVC Nigeria Consortium Student Paper	7%
2	booksreadr.org Internet Source	<1%
3	angkeanjani.blogspot.com Internet Source	<1%
4	s3.amazonaws.com Internet Source	<1%
5	Gede Indra Pramana. "Ekonomi Politik Pembunuhan Massal: Prolog Pembunuhan Massal 1965 di Bali", Jurnal Keamanan Nasional, 2018 Publication	<1%

Exclude quotes	Off	Exclude matches	Off
Exclude bibliography	Off		

FINANCIAL ASPECTS IN THE TEXTILE INDUSTRY BY USING THE SPINNER JET SYSTEM

GRADEMARK REPORT

FINAL GRADE

/0

GENERAL COMMENTS

Instructor

PAGE 1

PAGE 2

PAGE 3

PAGE 4

PAGE 5

PAGE 6

PAGE 7

PAGE 8

PAGE 9